

Energy Center at Discovery Park

Historical Accomplishments

- Since August 2005, the Energy Center (EC) has built an energy research community of 185 Purdue faculty representing 7 colleges and 30 departments. EC supports 10 research initiatives: Bioenergy; Clean Coal Technologies; Electrochemical; Global Partnerships; Hydrogen; Nuclear; Power Electronics; Social, Economic, Political Aspects of Energy; Solar; and Wind.
- To date, submitted proposals for external funding have totaled \$75.4M; awards total \$39.6M. EC also facilitated submission of the two largest grant proposals in Purdue's history, the \$125M/5 year proposal for DOE's GTL Bioenergy Research Center and a \$500M proposal for the BP plc Energy Biosciences Institute. Although not funded, the effort to produce the proposals and Purdue's extremely close finish served to inform Purdue faculty of the competitive field and the development activities needed on campus to ensure success in future competitions.
- Notable successful proposals resulted in awards of \$17M (third largest award in Purdue history) from the US DOE Predictive Science Academic Alliance Program to Jayathi Murthy et al for MEMs device reliability simulation; \$6.25M MURI award to Steve Heister et al for Gelled Hypergolic Propellant research; and \$5M from USDOE to Nancy Ho for working with the ADM Corporation to deploy her yeast for cellulose to ethanol conversion.
- Seed grants to Purdue faculty since center launch total \$802,500.
- Conventional energy sources and conservation are addressed in new centers launched with EC support, e.g., an NSF Engineering Research Center for efficient hydraulic power systems led by Monika Ivantisyнова. EC serves as a portal for external constituents interested in energy research at Purdue and an internal convener of faculty groups, thereby ensuring connectivity among energy stakeholders.

Key Activities Past 18 Months

- Over 80 faculty from colleges such as agriculture, science, engineering are actively working together on all phases of Bioenergy. These efforts are resulting in funded proposals and plans for new proposals such as a Bioenergy focused Energy Frontiers Research Center proposal.
- Coal research activities have been energized in partnership with the State of Indiana's Lt. Governor's office through the Indiana Center for Coal Technology Research. Through this effort and our Purdue Calumet faculty we have engaged Mittal Steel and other companies in Northwest Indiana.
- Social, economic, policy and political factors are important factors in seeking solutions to the global energy challenge. EC has brought together faculty in this area. \$1.6M in direct funding has been received by this team since the Center's launch in August, 2005.
- Two companies have been launched: (1) a company based upon thin film PV technology, and (2) a company based upon novel water splitting technology for hydrogen production on demand.
- EC is forming collaborations with the Center for the Environment (C4E) and the Purdue Center for Climate Change Research (PCCRC).

Future Opportunities and Aspirations

- The EC will strategically organize large multidisciplinary campus communities in many broad aspects of energy. The communities will lead to new curricula in energy at all levels, new large size research proposals, multiple Indiana and global industrial and academic collaborations, distinguishing Purdue symposia, develop new laboratories across campus, recruit key individuals for the three vacant energy chair professorships and establish additional chairs, and contribute to the new green energy economy.
- We see tremendous growth opportunity in 4 major areas based upon the core strengths of our faculty and our assessment of key areas of need: (1) Energy Systems and Policy Analysis, (2) Hybrid Vehicle Systems, (3) Novel Propulsion Systems, and (4) Energy Education for K to Adult.